2026 TUESDAY PROBLEMS #3

19 october

hints, one per page
close your eyes and press "nextpage" n times for a hint to problem n

1. If a number ends with k zeros, then is divisible by 10^k.

So we want the largest k such that $1000! = m10^k$ (in particular, $10 \nmid m$).

2. Plot a graph of $S(N)$ against N.

Or perhaps $S(N)$ against something else.

3. The answer is the number of such subsets that contain n, plus the number of such subsets that do not contain n.

4. Try some small values for p?

Remember that your goal is not to prove that $p^3 + 2$ is prime, but rather to prove that the given implication is true.

5. symmetry is helpful here